THE NATIONAL CENTER ON
Parent, Family, and
Community Engagement™

MEASURING WHAT MATTERS:
Exercises in Data Management

Exercise 3:
ANALYZE AND AGGREGATE
Dig Into Data

NCPFCE@childrens.harvard.edu
http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/family/

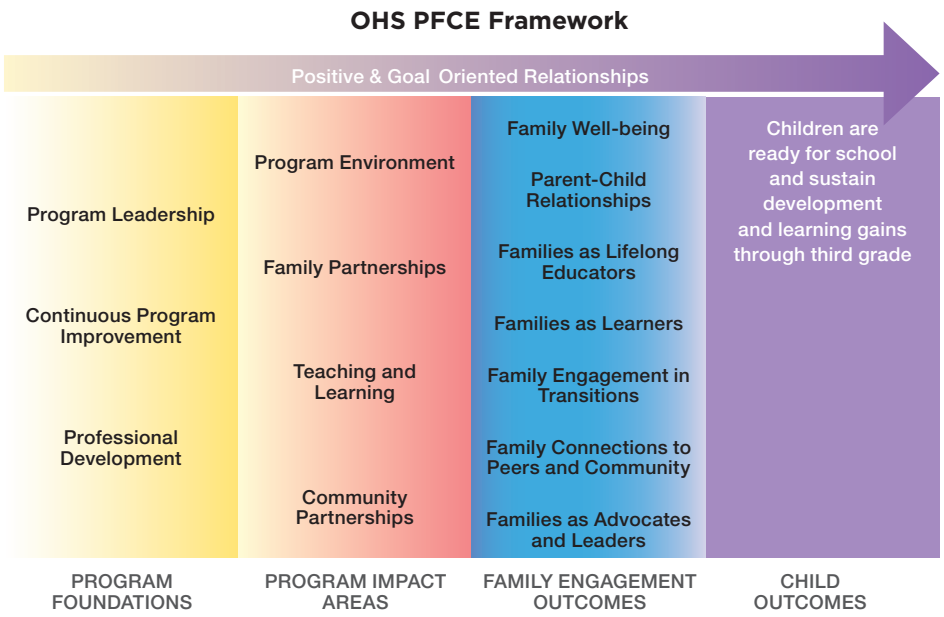
This document was developed by the National Center on Parent, Family, and Community Engagement for the Office of Head Start under grant #90HC0003. We are grateful to our colleagues and the families in the Head Start and Early Head Start community for their contributions.

EXERCISE SERIES INTRODUCTION

As a Head Start or Early Head Start leader, do you sometimes wonder how you will use your program's data about families to decide your priorities and track program and family progress? Are you concerned about responding to questions from your governing body, Policy Council, or community leaders regarding the progress and results of program activities with families? Are you comfortable collecting and analyzing data on children's progress, but less sure of how to assess your progress with families? If you answered "yes" to any of these questions, we invite you to try out this series of exercises.

As you set goals and develop and implement plans within a five-year project period, you will rely on data in at least two ways. One is to assess how well you are providing quality services for children and families and how you can improve your work. The second is to measure progress on outcomes for children and families. We created this exercise series to support program staff and families in both ways. We will explore the following questions as they relate to parent, family, and community engagement:

- What are Parent, Family, and Community Engagement (PFCE) data?
- What are the differences between measures of *effort* and measures of *effect*?
- What does it mean to aggregate and disaggregate data?
- What does it mean to track progress over time?
- How can data be meaningfully used and shared?



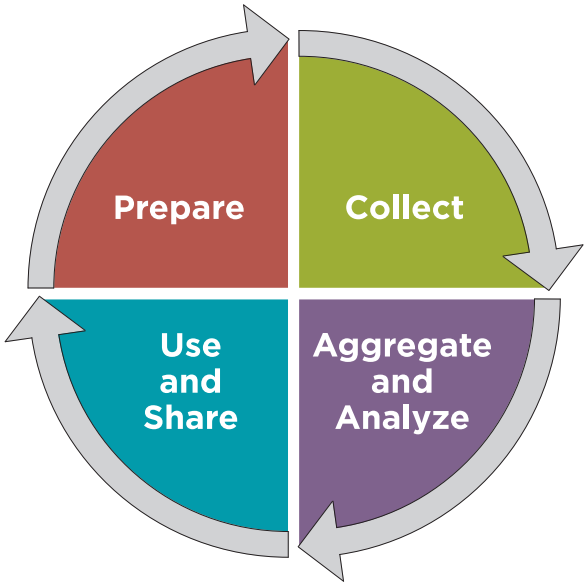
The Office of Head Start (OHS) Parent, Family, and Community Engagement (PFCE) Framework is a research-based approach to program change that shows how Head Start/Early Head Start programs can work together as a whole—across systems and service areas—to promote family engagement and children's learning and development.

The data that we will be examining relate to the PFCE Framework Family Engagement Outcomes in the blue column.

The exercises are also organized to follow the four activities in the data management cycle: prepare, collect, aggregate and analyze, and use and share.[1] Each of these exercises focuses on a specific activity and will help you:

- **Prepare:** Get ready for data collection by thinking about the different kinds of data you need in order to show the reach and impact of your work with families.
- **Collect:** Identify how to gather data that are useful and easy to interpret.
- **Aggregate and Analyze:** Learn ways you can look at data to examine how well your program and families are doing in terms of the Family Outcomes of the OHS PFCE Framework.
- **Use and Share:** Understand the importance of sharing data in accurate, appealing, and accessible ways and learn strategies for using data to inform various aspects of programming.

The Four Data Activities to Support Family Progress Toward Positive Family Outcomes



The exercises in this series introduce concepts related to the four Data Activities that build on one another in a specific sequence. **It is important to begin with the first exercise and continue through to the last one in the series.**

[1] *Measuring What Matters: Using Data to Support Family Progress—Overview*. Retrieved from http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/family/docs/measuring-what-matters.pdf

Exercise 3 is about ***analyzing, aggregating,*** and ***disaggregating*** Parent, Family, and Community Engagement (PFCE) data. Analyzing data means examining information you have collected and making sense of it. This exercise introduces three ways to analyze your program's data: 1) aggregation, 2) disaggregation, and 3) data analysis across time. Aggregation involves combining and summarizing similar data from multiple sources. Disaggregation means taking a summary of data and breaking it into parts. These parts are often called subgroups or subsets. Data analysis across time means comparing data that have been collected over different time periods.

This exercise features a story about the Hopeful Beginnings Head Start Program (HBP) as it analyzes data from its seven sites. The goal of HBP's data analysis is to understand its progress toward one of the expected PFCE Family Outcomes.

As a program leader, you can use this exercise to:

- Help your program staff understand how aggregating data can give a *whole* picture of your program's PFCE work.
- Help your program staff understand how disaggregating data can provide information about how program sites, specific program components, or subgroups of families are reaching their PFCE goals.
- Analyze data across time to identify how your program has changed over a period of weeks, months, or years.

HOW TO USE EXERCISE 3:

On Your Own

- Read the first sections of this story, ***Introduction, Prepare, Collect, Aggregating PFCE Data***, and ***Disaggregating PFCE Data***.
- Read the final sections of the story, ***Using and Sharing Data for Program Improvement*** and ***Analyzing Data over Time***.
- Complete Table 4, using information from your own program.

Group Discussion

- Gather with others in your program to share your answers to the prompts in Table 4.
- Write any remaining questions you have about the data concepts in the exercise.
- Work together to create a plan for applying the data concepts from the exercise to your own work.

This exercise contains a lot of information!

We suggest pacing yourself as you read it.

Consider reading different sections in different sittings.

LEARNING OBJECTIVES

- **Understand how to aggregate data across program sites and different service areas.**
- **Learn how to disaggregate data in order to identify patterns in different groups of families or sites.**
- **Gain experience looking at data across time in order to track progress toward program goals.**

What does it mean to aggregate data?

Aggregating data means summarizing or combining similar data. For instance, an Early Head Start program could aggregate data on the total number of home visits that family services workers (FSWs) conduct (e.g., 214 home visits in year 2014). Or a Head Start program could aggregate data about families' unemployment status from multiple sites (e.g., 19 percent of families are unemployed). Aggregate data is a summary of all of the data for a particular topic. Aggregating data can help reveal a story or patterns about your program's service delivery or the needs of the families you serve.

What does it mean to disaggregate data?

Disaggregating data means breaking data into smaller parts. These smaller parts of data are often called subgroups or subsets. Subgroups are usually made up of people or things that share certain characteristics. You can get a better understanding of families' employment by grouping or creating subsets of data. These subsets might include program sites, family members' gender, or English language proficiency. For example, using English language proficiency to disaggregate employment data, a program may learn that 55 percent of English-speaking mothers are employed, while only 20 percent of mothers with a different home language held jobs in 2014. Programs can use disaggregated data to compare subgroups and determine whether there are specific subgroups that would benefit from additional training, services, or support.

What does it mean to analyze data across time?

When you collect data with the same instrument for different time periods (e.g., weeks, months, years), you are able to compare your findings across time. Looking at data across time helps you understand whether things are getting better or worse. It also helps you track progress toward a set goal. For example, a program working on developing financial literacy with families can collect data on the percentage of families with bank accounts at different points in time during the year (e.g., fall, winter, and spring). This will help the program assess whether it is making progress toward increasing families' awareness about the need for saving money in safe and secure places. The program may find, for example, that only ten percent of families had a bank account in the fall, but 40 percent have an account in the spring.

The Hopeful Beginnings Program: Aggregating and Analyzing Data to Build Family Connections

Introduction

Sylvia Wong is the Director of The Hopeful Beginnings Program (HBP). HBP serves 450 families across seven Head Start sites. Sylvia was startled by the results of HBP's Community Needs Assessment. In this assessment, 50 percent of families reported that they had very little time to socialize with family and friends. Fifty-five percent of families reported never taking part in community activities (see Figures 1 and 2).

Figure 1. Community Needs Assessment: Family time for socializing

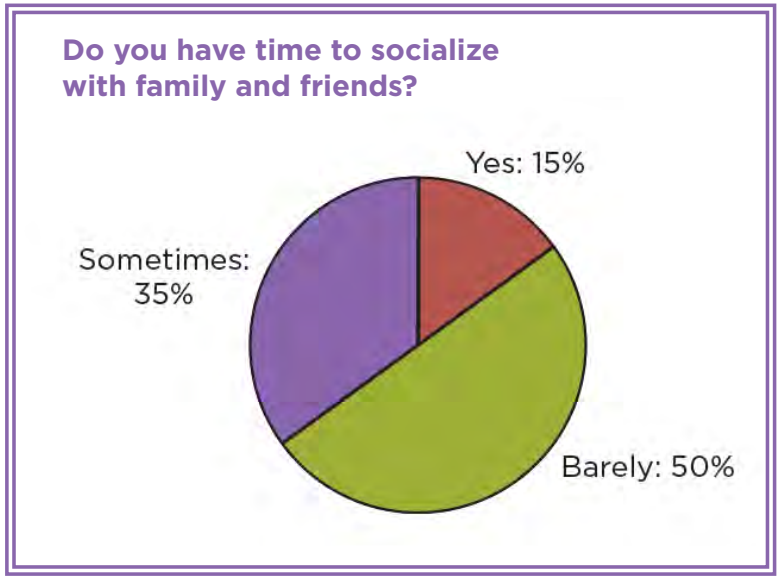
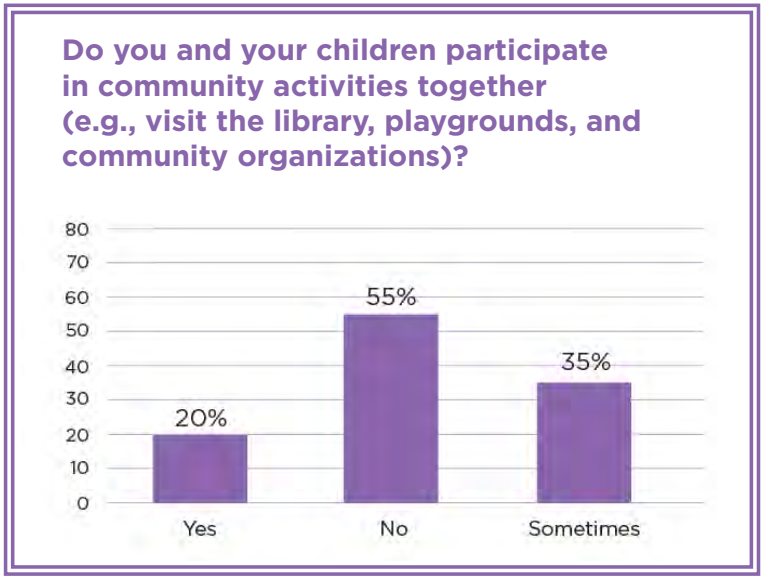


Figure 2. Community Needs Assessment: Participation in community activities



Sylvia brought together her PFCE planning team to discuss the results of the Community Needs Assessment. The team consisted of family services workers and parents. Family services workers (FSWs) verified that during intake interviews many families seemed somewhat isolated. Parent focus groups, conducted during program self-assessment, also confirmed these data. Sylvia was troubled. She knew from research that strong social support networks, including connections to peers and a larger community, are essential for positive family and child outcomes.

Prepare

The data led Sylvia and her team to develop a goal for the program's five-year plan: support the development of Family Connections to Peers and Community, one of the expected outcomes of the PFCE Framework. Table 1 shows the goal, objectives, and services (actions) related to this expected family outcome and related measures that the planning team proposed in its five-year application.

Table 1.
HBP's Baseline Application Information

Goal	Objective	Services (Actions)	Expected Outcome	Measures
What PFCE goal does our program want to accomplish?	***What are we planning to do to reach our PFCE goal?***	***What actions are we going to take?***	***Which expected outcomes relate to our goals, objectives, and services? (PFCE Framework Family Outcome)***	***Measures of Effort: How much programming are we offering? Are we carrying out services as planned?*** ***Measures of Effect: What difference is our program making? What are the changes in knowledge and behavior?***
Hopeful Beginnings Program (HBP) will support the development of Family Connections to Peers and Community.	Over a five-year period, HBP will: 1) Increase families' knowledge and awareness of community resources they can use by providing families with information about resources every month. 2) Increase opportunities for families to establish connections to peers by encouraging family participation in at least 5 family nights.	• Disseminate information and resources about community programs on a monthly basis. • Host family nights once a month for parents to get to know each other and discuss parenting topics. Provide child care and interpreters.	Families will have the information, knowledge, and access necessary to make use of community resources and will attend at least 5 parent networking meetings organized by HPB per year. (Family Connections to Peers and Community)	Effort: Number of community resources parents are connected to and number of parents who attend the networking events. Effect: Parents report using more community resources than before and developing relationships with other programs and community families.

Collect

In order to track progress on their goals and objectives, Sylvia and her team decided to create a survey about Family Connections to Peers and Community (see Figure 3). The connections survey asked questions about how often families connected with friends and extended family members. It also asked how often families took their children to local community sites, such as playgrounds or the public library. A small group of parents and staff members translated the survey into the languages spoken by most of the families. Before finalizing the survey, a different group of families reviewed it and offered feedback. They suggested that families might increase their connections to peers and community at religious or cultural events. This new information was incorporated into the survey.

HOPEFUL BEGINNINGS PROGRAM
FAMILY CONNECTIONS TO PEERS AND COMMUNITY SURVEY

We are interested in learning about some of the activities you do with your children and other families in the community. Please circle the number that corresponds to the best answer to the following questions.

How often do you...	Never	Rarely	A few times a month	A few times a week	Once a day
Spend time with your extended family?	1	2	3	4	5
Spend time with friends?	1	2	3	4	5
Set up playdates for your children?	1	2	3	4	5
Talk to other parents about parenting?	1	2	3	4	5
Take your child to the library?	1	2	3	4	5
Take your child to the park or playground?	1	2	3	4	5
Take your child to a museum, zoo, aquarium, YMCA/Boys & Girls Club, or other local community sites?	1	2	3	4	5
Attend community events with your family (e.g., religious and cultural events, town events, or school events)?	1	2	3	4	5

THANK YOU!!!!

photo courtesy of NCQTL

photo courtesy of NCQTL

The HBP team decided to integrate this survey into its program-wide family partnership process. In the fall and spring of every year, FSWs at the program were already responsible for asking families questions about their goals, family plans, and experiences in the community.

FSWs were trained on how to ask the new survey questions correctly. They were also trained to enter results accurately into their programs' data management system. Sylvia worked with the database software developer to create a new portal where FSWs could easily enter the new survey data.

By the time the family assessment process was completed in December, the team had collected surveys from 317 families (70 percent of all families served). The team members followed specific steps to carefully enter this PFCE data into their data management system (see textbox below).

ENTERING SURVEY DATA

Family services workers from HBP completed the connections survey with families using paper surveys. They transferred the results into the online data management system by using the following steps:

1. Locating each family in their database using that family's unique ID.
2. Entering the connections survey portal (see below).
3. Selecting the response each family provided.
4. Saving the information.

2. How often do families

	Never	Rarely	A Few Times a Month	A Few Times a Week	Once a Day
Spend time with your extended family?	○	○	○	○	○
Spend time with friends?	○	○	○	○	○
Set up playdates for your children?	○	○	○	○	○
Talk to other parents about parenting?	○	○	○	○	○
Take your child to the library?	○	○	○	○	○
Take your child to the park or playground?	○	○	○	○	○
Take your child to a museum, zoo, aquarium, YMCA/Boys & Girls Club, or other local community sites?	○	○	○	○	○
Attend community events with your family (e.g. religious and cultural events, town events, or school events?	○	○	○	○	○

Sylvia's data manager then exported the information from across the sites. The data manager created a master Excel spreadsheet that included family ID, site ID, and survey responses. Sylvia would use this Excel spreadsheet to conduct her analysis. The data manager created the sheet using the following steps:

1. Creating meaningful column titles in the spreadsheet. The data manager renamed the column titles to align with the survey questions. For example, she called the column about the library, "library," and the column about taking the child to the playground, "playground."
2. Ensuring that the numeric score for each response aligned with the score provided on the hard copies of the survey. For example, she needed to make sure that "never" corresponded to a score of "1," and that "rarely" corresponded to a score of "2," etc.
3. Checking random responses in her Excel spreadsheet against a few surveys to make sure the data were entered correctly.

	A	B	C	D	E	F	G	H	I	J
1	Family I.D	Site I.D.	Family Time	Friends Time	Playdates	Talking Parenting	Library	Playground	Museum/Zoo/Othe	Community Events
2	009	1	3	3	3	2	1	4	1	3
3	001	1	4	3	2	1	2	4	1	3
4	002	1	4	4	1	2	2	3	2	4
5	003	1	4	4	3	2	1	3	2	2
6	007	1	4	3	2	2	1	3	1	3
7	010	1	4	4	2	1	2	3	1	2
8	004	1	5	2	3	1	2	2	2	3
9	005	1	5	3	2	1	3	1	1	2
10	006	1	5	3	1	2	2	3	1	2
11	008	1	5	2	2	2	1	4	1	3
12	018	2	3	2	3	1	1	3	1	3
13	020	2	3	2	2	1	1	2	1	3
14	015	2	4	3	3	1	1	2	1	1
15	016	2	4	2	2	1	1	2	1	2
16	017	2	4	2	2	1	1	2	1	2
17	019	2	4	1	3	1	1	3	1	3
18	011	2	5	3	3	1	1	3	1	3
19	012	2	5	3	2	1	2	3	1	3
20	013	2	5	4	3	1	2	2	1	1
21	014	2	5	3	3	1	1	2	1	1
22	021	3	4	2	2	1	2	4	1	2
23	022	3	4	3	3	2	2	4	1	2
24	023	3	4	3	2	2	1	4	1	2
25	024	3	4	3	3	2	1	4	1	3
26	030	3	4	4	3	2	4	3	2	3
27	025	3	5	4	3	1	1	5	1	3
28	026	3	5	4	2	2	2	3	1	3
29	027	3	5	4	2	3	3	3	2	3
30	028	3	5	5	3	3	3	4	2	2
31	029	3	5	4	3	2	3	4	1	3

photo courtesy of NCQTL

photo courtesy of NCQTL

After initially feeling excited about all the data her team was collecting, Sylvia started to feel overwhelmed. Now her team had to make sense of all the data; so they developed a *data analysis plan.* A *data analysis plan* is a roadmap for how to organize and analyze data. Table 2 shows what Sylvia and her team planned for their analysis.

Table 2.
HBP Data Analysis Plan

Step	Data Source	Analysis	Results
Aggregate Data	Survey questions	Identify how the program is doing overall in terms of the expected outcome, Family Connections to Peers and Community. This involves calculating the program-wide average connection score (see below).	
Disaggregate Data	Survey questions	Analyze families' answers to each question in the survey. These answers will indicate the areas of Family Connections to Peers and Community that need the greatest improvement.	
Analyze Data Across Years	Survey questions asked at different time points	Analyze how the overall program and the specific sites make progress from year to year. This will reveal progress across time on target goals.	

Aggregating PFCE Data

The first step that Sylvia and her team took to analyze their survey data was to aggregate (summarize) their data across all sites. They did this **to understand how *all* families, across *all* seven sites, were connecting to other families and community** resources. They knew that calculating averages is the most common way of aggregating. The team needed to obtain a score that would represent an average of data gathered from the connections survey data from families across the entire program. They called this the **program-wide average connection score**.

Calculating the Program-Wide Average Connection Score

To calculate the program-wide average connection score, Sylvia and her team had to go through a few steps:

1. Calculate the **total score or sum** for *each* family. The team did this by adding the numbers in each row together. Since the total number of questions in the survey was eight and the score scale was 1–5, the minimum score a family could get was 8 (1 point x 8 questions), while the maximum was 40 (5 points x 8 questions).

   For example, see row 1 of Figure 4 for the data entered from the survey for **Family 009** from **Site 1.** The data show us that Family 009 responded as follows:

Question	Response
Spends time with extended family	(3) A few times a month
Spends time with friends	(3) A few times a month
Arranges playdates	(3) A few times a month
Talks to other parents about parenting	(2) Only rarely
Takes their children to the library	(1) Never
Takes their children to the playground/park	(4) A few times a week
Goes to the museum/zoo/other	(1) Never
Attends community events	(3) A few times a month

For family 009 the total connection score is 3+3+3+2+1+4+1+3=**20**. The last column in the figure below displays the total score or sum for each family.

Figure 4. Spreadsheet with Connection Survey Scores

	A	B	C	D	E	F	G	H	I	J	K
1	Family LI	Site I D	Family Time	Friends Time	Playdates	Talking Parenting	Library	Playground	Museum/Zoo/Othe	Community Events	Sum for each Famil
2	009	1	3	3	3	2	1	4	1	3	20
3	001	1	4	3	2	1	2	4	1	3	20
4	002	1	4	4	1	2	2	3	2	4	22
5	003	1	4	4	3	2	1	3	2	2	21
6	007	1	4	3	2	2	1	3	1	3	19
7	010	1	4	4	2	1	2	3	1	2	19
8	004	1	5	2	3	1	2	2	2	3	20
9	005	1	5	3	2	1	3	1	1	2	18
10	006	1	5	3	1	2	2	3	1	2	19
11	008	1	5	2	2	2	1	4	1	3	20

photo courtesy of NCQTL

photo courtesy of NCQTL

2. Calculate the program-wide average connection score. The team needed to **aggregate** the sum score for each family (from step 1) and estimate the **program-wide average connection score**. In order to calculate this average score, they added together the sum score for each family together (see below). Then they divided that total by the number of families that had answered the survey (317).

Figure 5. Spreadsheet with Program-Wide Connection Scores

	A	B	C	D	E	F	G	H	I	J	K
	Family I.D.	Site I.D.	Family Time	Friends Time	Playdates	Talking Parenting	Library	Playground	Museum/Zoo/Othe	Community Events	Sum for each Famil
	311	7	3	3	2	1	1	1	1	2	**14**
	312	7	3	2	2	1	1	3	1	2	**15**
	313	7	3	2	2	1	1	2	1	2	**14**
	314	7	4	3	2	1	1	2	1	2	**16**
	315	7	3	2	2	1	1	2	1	1	**13**
	316	7	4	3	2	1	1	2	1	2	**16**
	317	7	4	2	2	1	1	2	1	2	**15**
											5706

When HBP added the scores of all families together, the total sum was 5,706. They then divided this number by 317 (the number of families who responded to the survey). The **program-wide average connection score** was **18** (5,706/317=18).

Figure 6. HBP Program-Wide Average Connection Score

Learning the program-wide average connection score for HBP was informative for Sylvia and her team. Ideally, the program-wide average score would be 40, the maximum score possible. However, HBP's score was less than half of the ideal score. Data clearly showed that families were struggling to connect with peers and the community. However, this program-wide average connection score did not give them any specific information. For example, they couldn't tell which community resource was least used (libraries, museums, community events, etc.). They didn't know how often families were talking with other parents about parenting. They also couldn't tell if families from some sites were more connected than families from other sites. The team members knew that they needed to analyze their data further in order to answer those questions.

Disaggregating PFCE Data

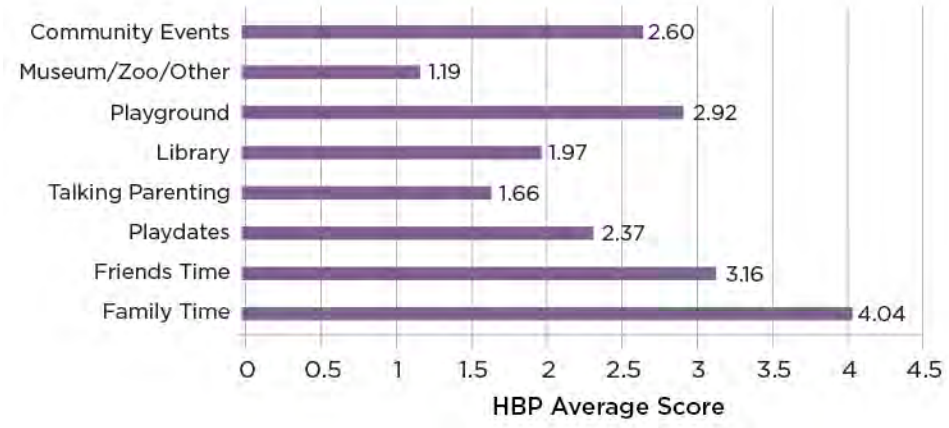
Sylvia and the family services workers needed to find out more specific details about family connections to peers and community. In the data analysis plan, the team members had indicated that they wanted to understand how families in the program had answered each of the survey questions. The answers would tell them about the activities families do with their children and other families in their communities. They needed to disaggregate their data by question.

Breaking the data down by survey question

Breaking the data down by how parents responded to **each** of the survey questions meant that they needed to calculate each question's **average connection score**.[1] On average, how often are families going to the library? To the playground? How often are families spending time with friends? Sylvia and her team calculated each question's average score using the following steps:

1. Add up all the scores in each column that represents each survey question.
2. Divide the total sum in each column by the number of families answering that given question (number of rows with families' IDs for that given column). The highest possible score for each individual question was 5. Figure 7 shows what they found.

Figure 7. HBP Average Connection Scores *by Question*

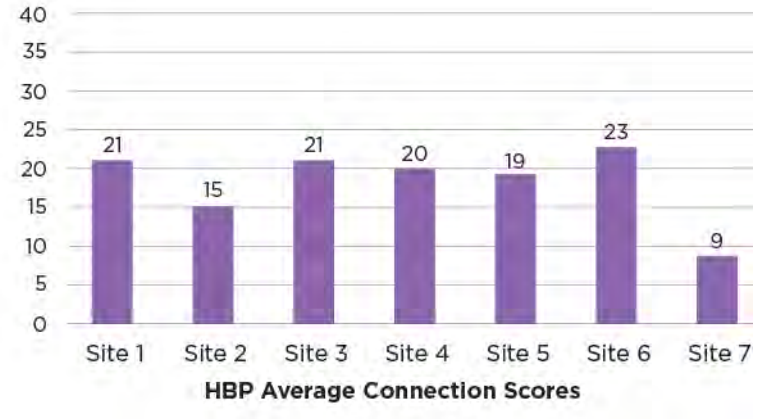


By disaggregating the survey data by question, the team realized that their data were telling a story. While parents were spending a good amount of time with their own families (at least once a week), they were rarely talking to other parents about parenting. The team also identified that parents were only rarely taking their children to the local library. Museums or zoos were the least used community resources.

[1]There are many ways to disaggregate data. The examples provided here involve disaggregating data by question, by program site, or by family subgroups. Data can also be disaggregated by gender, ethnicity, education level, number of children, and age.

After disaggregating the data by question, Monica, one of the FSWs, wanted to understand what was going on at her site. She asked about her site's average connection score. That request gave the team a great idea. They decided to expand what they had included in the data analysis plan by disaggregating the data one more time, but this time doing it **by site**. The team disaggregated the data to compare the average connection scores across program sites. They could then see whether there were specific sites in greater need of support. Figure 8 displays what they found.

Figure 8. HBP Average Connection Scores *by Site*



As shown in Figure 8, there were program sites where family connections to peers and community were stronger. Monica was surprised to discover that her site (Site 7) had the lowest average score. She knew that parents at her site had expressed feelings of isolation. But she didn't expect the score for her site to be this low. Monica was concerned and had a number of questions, but she wasn't sure what to do next. She met with Sylvia and asked for help. Sylvia was supportive and encouraged the entire team to offer potential explanations for why Site 7, along with Site 2, had the lowest average scores. The team noted that many of the families served by those two sites lived in housing complexes far from the center of town. They wondered if there were fewer opportunities for families in these areas to expand their networks. The team also wondered if it was harder for these families to access public parks and institutions.

Breaking the data down by family subgroup

Hugo, one of the FSWs from Site 4, was curious about how different groups of families at his site might have answered the connection survey differently. For example, at Site 4 a large number of families had at least one unemployed parent. He wanted to know if these families had a pattern in their responses. He had read research reports that showed that unemployment might

contribute to social isolation. He was wondering if families in his program with one unemployed parent felt less connected to their community than other families.

Other FSWs at HBP wondered if there were subgroups of families at their sites that also had lower connection scores than other families. They were especially curious about single-parent families and families who had primary home languages other than English.

Sylvia encouraged each site to disaggregate its data to learn more about these families. First, she shared a **rule of thumb** to determine whether it makes sense to disaggregate data by a particular family subgroup (see sidebar). If **more than 25 percent** of families in the program are in a given subgroup, it makes sense to explore how this subgroup responded to the survey. Since unemployed families made up 33 percent of the program, and dual language learning (DLL) families[2] made up 55 percent of the program, the FSWs decided to focus on those two subgroups of families.

In order to disaggregate HBP's PFCE data by employment and DLL status, the team needed more information. The team needed to know each family's employment status and home language. These data were available in the program's data management system. The team disaggregated the data using the following steps:

1. HBP's data manager exported employment status and home language information from the data management system.
2. Sylvia added the two columns to the Excel spreadsheet, one for employment status and one for DLL status.
3. Sylvia and the team checked the assigned codes. To disaggregate by DLL status, they assigned a code of 1 for families who answered yes to speaking a language other than English at home. They assigned a code of zero (0) for families who did not speak a language other than English. For disaggregating by employment status, they assigned employed families a code of 1. They assigned families with at least one unemployed parent a code of zero (0).

Figure 9. Entering Employment and DLL Status into HBP's Data Management System

DLL Status		Employment Status	
Status	**Code**	**Status**	**Code**
Yes	1	Employed	1
No	0	Unemployed	0

[2]Families whose children's native language was not English

Rule of Thumb for Disaggregating Data by Subgroup

How do you determine whether it makes sense to analyze data on a particular subgroup in your program? It depends on how large that particular subgroup is relative to your overall program. As a general rule, you can say that if 25 percent or more of program families fall into a particular subgroup, you should include that subgroup in your disaggregation analysis. For example, if ten percent of program families have one child, that subgroup of families may be too small to focus on for your data analysis. In contrast, if 30 percent of families in your program are unemployed, the subgroup may be large enough for you to include in a disaggregation analysis.

photo courtesy of NCQTL

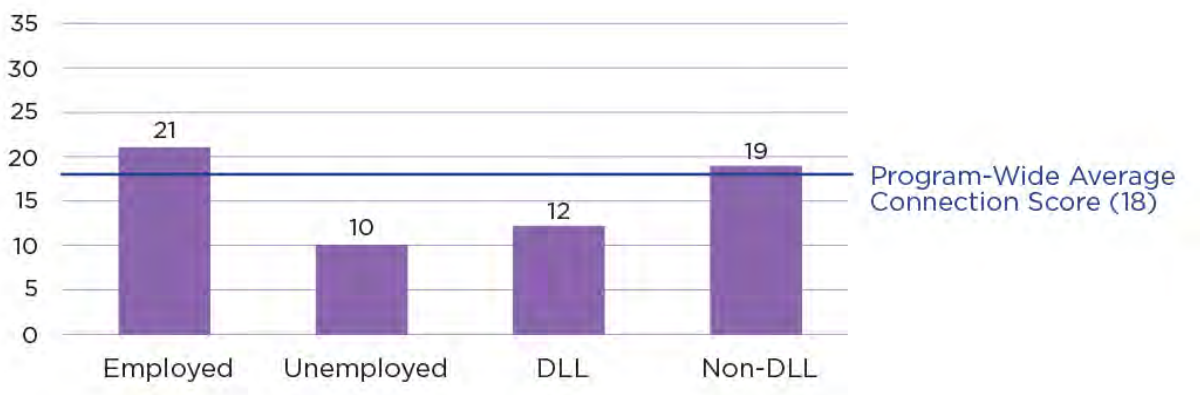
4. Sylvia and her team sorted their data by family subgroups (DLL, Non-DLL, Employed, Unemployed). Figure 10 (below) shows how the team first analyzed the data based on employment status. Next, they sorted the data based on DLL status.

Figure 10. HBP PFCE Data Sorted by Subgroup

J	K	O	P
Community Events	Sum for each Famil	Employment	DLL
3	20	0	1
3	20	0	1
4	22	0	1
2	21	0	1
3	19	0	1
2	19	0	1
3	20	0	1
2	18	0	1
2	19	0	1
3	20	0	1
3	17	0	1
3	15	0	1
1	16	0	1
2	15	0	1
2	15	0	1
3	17	0	1
3	20	0	1
3	20	0	1
1	19	0	1
1	17	0	1
2	18	0	1
2	21	0	1
2	19	0	1
3	21	0	1
3	25	0	1
3	23	0	1
3	22	0	1
3	25	0	1
2	27	0	1
3	25	0	1
3	18	0	1
2	19	1	1
1	17	1	1
2	18	1	1
3	21	1	1
2	19	1	0
2	17	1	0
3	20	1	0
3	21	1	0

5. The team calculated the average scores for each of the four subgroups. They displayed their results in a graph (see Figure 11, below).

Figure 11. HBP Connection Scores *by Family Subgroups*



Sylvia and her team were not surprised when they saw the results of their disaggregation by family subgroup. Their analysis confirmed Hugo's hypothesis. Families with at least one unemployed parent connected much less often with peers and communities than their employed counterparts. Families with one unemployed parent had an average connection score of 10, while employed families had an average connection score of 21. Similarly, DLL families also seemed to be less connected to other families and community resources than non-DLL families. Dual language learner families had a connection score of 12, while non-DLL families had an average connection score of 19.

The team brainstormed possible explanations for these findings. They discussed the logistical challenges of accessing community resources (e.g., transportation, work schedules, admission fees, etc.). They also talked about how the emotional challenges of unemployment might contribute to social isolation. The team noted that while DLL families may have strong social connections, they might have difficulty accessing community resources. One reason for this might be language barriers: sites may only advertise and promote events in English, staff may be primarily English speaking, and printed information may not be translated into the families' home languages.

photo courtesy of NCQTL

How to engage families in data analysis:

- Gather input from families about the questions they would like to be asked.
- Develop tools that collect valuable information and that engage families in a relationship-building process.
- Invite families to analyze the data if the data is anonymous.
- Share the results of the analysis with families. Use graphics to illustrate the results.
- Discuss potential uses for data.

Let's Reflect

As the HBP example shows, aggregating and disaggregating data can be very helpful in making sense of data. The next step is to think about what the program is learning from that analysis. What does it mean for the program's goal, objective(s), and services (actions)? In other words, when you analyze data, you need to keep in mind two important questions:

1. WHAT: What did we learn?
2. SO WHAT: What does this mean for our program?

Using these two questions, let's take a closer look at how Sylvia and her team's experience.

***What* did we learn?**	***So what* does this mean for our program?**
HBP's program-wide average connection score was 18 on a scale of 1–40. (1=lowest; 40=highest)	A connection score of 18 is relatively low. It confirms the need for the program to focus on its primary goal: supporting Family Connections with Peers and Community.
HBP's families, on average, were[3]: 1. Spending time with their extended families at least once a week 2. Spending time with friends at least once a month 3. Talking with other parents about parenting only rarely 4. Taking their children to the library only rarely 5. Taking their children to museums, zoos, or other educational community attractions almost never 6. Attending community events several times a month	To design services and activities to meet the goal to increase family connections with peers and community, HBP needs to pay close attention to the need for: 1. Networking opportunities for families to talk about parenting 2. Increasing awareness of and facilitating access to: • Public libraries • Museums, zoos, and other educational community attractions
Site 7 had the lowest connection score (9), followed by Site 2 (with a score of 15).	Sites 2 and 7 may want to consider additional services and activities to support Family Connections to Peers and Community.
Families with one unemployed parent and DLL families had lower average connection scores than their employed and non-DLL counterparts.	Families with one unemployed parent and DLL families may benefit from additional services and activities to support Family Connections to Peers and Community.

[3]Keep in mind that these results are program-wide averages. These results do not capture the extent of isolation that might exist for individual sites. This can be explored through data disaggregation.

Using and Sharing Data for Program Improvement[4]

After analyzing the data from the fall of Year 1, Sylvia and her team revisited their program's five-year plan. HBP's PFCE data showed that libraries and museums were the least utilized resources in the community. The data also continued to show that parents had limited family networking opportunities. Sylvia and her team knew that to make progress toward HBP's goal, they would need to intensify their services. Handing out information and holding monthly parenting nights was not enough. They decided to add three additional activities in the spring:

- **Distributing library card applications at parent-teacher conferences.** A mother on the planning team explained that many families did not go to the library because they did not have library cards. Families didn't know how to get library cards and felt intimidated asking for them. HBP arranged for library card applications to be available at all spring parent-teacher conferences. Families could fill them out at the event, with the assistance of the teacher. Interpreters were available when necessary. Later in the month, the family services team coordinated visits to the local libraries, where families could hand in their applications and receive their library cards.
- **Arranging a monthly field trip to a museum, library, zoo, or other organization.** To support families' use of community resources, each site's family services team set up field trips to different community organizations. Some field trips were held during program hours and others on weekends so working parents could attend.
- **Organizing a family potluck picnic and soccer tournament.** A father on the planning committee thought it might be fun to bring some dads together to play in a soccer tournament. The planning team members gave him their full support. Education directors at each of the sites took the lead in organizing a Sunday family potluck picnic and soccer tournament for fathers. This was an opportunity for the families to enjoy the spring weather and meet other parents.

[4]To learn more about using data for program improvement and sharing data with program stakeholders, see *Measuring What Matters Exercise 4: Using PFCE Data to Tell Your Story.*

Analyzing Data Over Time

After a year and a half, Sylvia and her team had collected data at three different times:

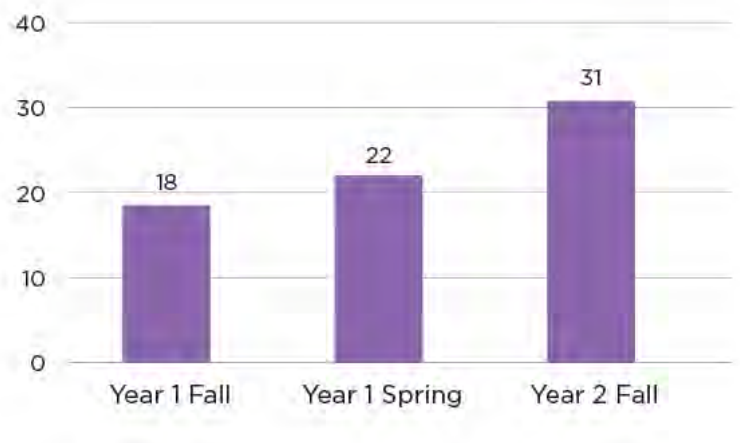
- Year 1 Fall
- Year 1 Spring
- Year 2 Fall

After each period of data collection, Sylvia and her PFCE team continued to look at their results and make program improvements based on the data. The activities added in the spring of Year 1 were extremely popular. HBP decided to repeat them in the fall of Year 2, with a few adjustments. For example, family services workers organized field trips to new locations. More families started to attend the potluck picnic and more fathers started to play in the soccer tournament. Some fathers even began to play soccer together more frequently and formed close friendships.

Now, Sylvia and her team wanted to know if families' connections to peers and community were increasing over time. They decided to look at data for only those families who had responded to the survey at all three times. This meant they were not including newly enrolled families in this analysis.

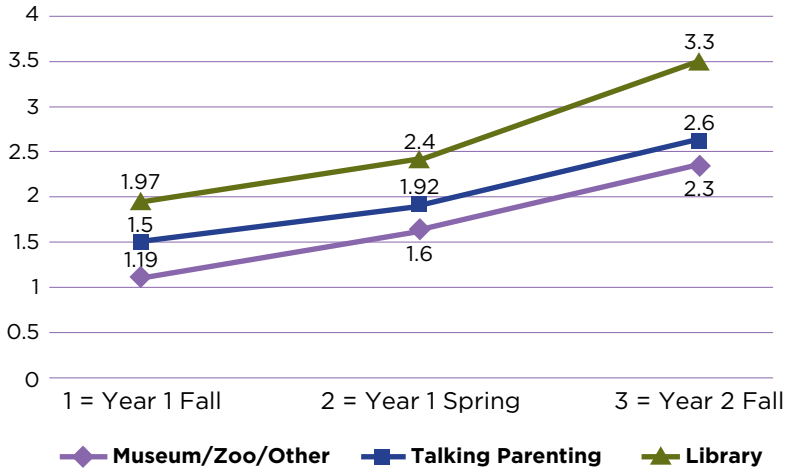
When they compared the program-wide average connection scores at each of the three time points, they were very pleased to see that the numbers improved across time (see Figure 12). Their overall average score had increased by 13 points, an increase of 32 percent.

Figure 12. HBP Program-Wide Average Connection Scores *Over Time*



After seeing the positive trend, the team felt confident that its efforts were paying off. Sylvia went back to her Excel spreadsheet. She wanted to look at whether there were increases in individual items on the connection survey. Specifically, she was interested in knowing whether families were now visiting museums and libraries more often and spending more time talking with other parents. They created a graph to displays their results (see Figure 13).

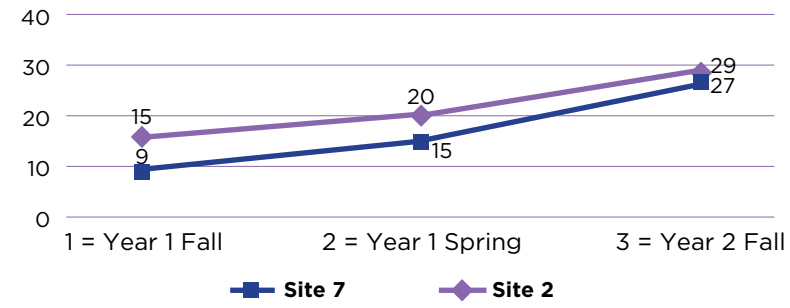
Figure 13. HBP Program-Wide Average Connection Scores *by Question*



The team saw that families had made the greatest progress in increasing their visits to the library. Families had also made important improvements in talking to other parents about parenting. Visits to museums and other community resources had also increased.

Sylvia went back to her Excel spreadsheet again. This time she wanted to see if there were improvements over time by site. In particular, she wanted to see if Sites 2 and 7 had made progress. Figure 14 shows what Sylvia and her team learned.

Figure 14. HBP Program-Wide Average Connection Scores *by Site*



KEEP IN MIND THAT YOUR PROGRAM HAS *NEW* AND *EXISTING* FAMILIES

At times, you might want to disaggregate your data into the two following subgroups: **existing** families and **newly enrolled** families into the program. Existing families will have received your services for extended periods of time. For this reason, they might show more positive outcomes than newly enrolled families who have just begun to take part in the activities and services your program offers.

Sylvia and her team were encouraged when they noticed that Site 2 had doubled its previous average connection score. Site 7 had tripled its average as well. However, when they compared Sites 2 and 7 with the other sites, these sites still had lower average connection scores.

Sylvia and her team realized that they would need to add new programming and services to improve outreach and networking opportunities at these two sites. Sylvia was grateful to have data to help her focus her efforts and guide her next steps to improve program planning. For the remainder of her five-year grant, Sylvia continued to collect, analyze, and use PFCE data to track progress toward HBP's goal to support Family Connections to Peers and Community. Each year, she reported HBP's progress to her staff, families, community stakeholders, and program specialist. At the end of her five-year grant, she was able to use these data to demonstrate her program's accomplishments in supporting families—and to apply successfully for a new grant.

Your Turn!

Table 3 lists examples of subgroups that your program might want to use for disaggregating data. It provides some sample explanations about why PFCE data might be different for each subgroup. The table also provides examples of services and activities that your program could implement to meet the needs of a particular subgroup.

Instructions

1. Read the example in Table 3 on page 25.
2. As you read the example, make note of the subgroups that your program serves.
3. Use Table 4 on page 26 to write your own ideas of what you might find when you disaggregate PFCE data by some of the subgroups your program serves.

Table 3.
Example of Disaggregation by Family Subgroup

PFCE Goal	Subgroup	Does your program serve this subgroup? (Yes/No)	Why might PFCE data be different for this subgroup?	What services and/or activities could be implemented to further support this subgroup?
Families increase the number of other families they know in the program and the number of community resources they use on a regular basis.	*Single-parent (mother or father) families*	*Yes* *(36% of our program's families are single-parent families)*	*Single-parent families may be less connected to peers and community due to lack of time and a weak support system.*	*Facilitating a "buddy system" to connect single-parent families with non-single-parent families for support and collaboration.* *Organize a "Watch Out for Each Other" initiative where all single-parent families in the program come together to share experiences and information about resources.*

Table 4.
Identifying Groups for Data Disaggregation

Subgroup	Does your program serve this subgroup? (Yes/No)	Why might PFCE data be different for this subgroup?	What services and/or activities could be implemented to further support this subgroup?
Dual Language Learners (DLL) Families			
Single-parent (mother or father) families			
Parents who are unemployed			
Large families (e.g., 3 or more children)			
Families with only boys (or only girls)			
Families with grandparents as head of household			
Families with one child			
Other: _____			

Conclusion

You can learn more about your program by aggregating, disaggregating, and analyzing data over time.

- Data aggregation allows you to understand your program's progress or services as a whole.
- Data disaggregation reveals how family progress can differ across program areas, sites, and subgroups of families.
- Data analysis across time shows whether your program activities and services are getting you closer to meeting your program goals.

Together, these techniques can reveal the full story of your program's PFCE work. The information can inform goal setting and your family partnerships to make progress toward the Family Engagement Outcomes of the OHS PFCE Framework.

Now that you have completed this exercise, you are ready to move to the last exercise in this series. Exercise 4, *Using PFCE Data to Tell Your Story*, is designed to help you think about the various ways to present and share data and use data to make programmatic decisions.

We invite you to review our *Measuring What Matters Resource Guide* at **http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/family/docs/measuring-matters-resource-guide.pdf**. This guide includes information on:

- Getting started
- Data tools or methods for tracking progress
- Program planning and program evaluation

Are you interested in learning more about using data to support family progress?

For additional NCPFCE resources on using data and assessing progress, visit **http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/family/assessing/assess.html**

For an overview of the Measuring What Matters Series, visit **http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/family/docs/measuring-what-matters.pdf**

THE NATIONAL CENTER ON

Parent, Family, and Community Engagement™